# PH3-A1 Phosphine Sensor


PATENTED

Technical Specification

Figure 1 PH3-A1 Schematic Diagram


All dimensions in millimetres (± 0.1mm)

Top View | Bottom View | Side View

| | | | |
|---|---|---|---|
| **PERFORMANCE** | Sensitivity | nA/ppm in 11ppm $PH_3$ | 550 to 900 |
| | Response time | $t_{90}$ (s) from zero to 5ppm $PH_3$ | < 25 |
| | Zero current | ppm equivalent in zero air | < ±0.3 |
| | Resolution | RMS noise (ppm equivalent) | < 0.03 |
| | Range | ppm $PH_3$ limit of performance warranty | 10 |
| | Linearity | ppm error at full scale, linear at zero, 20ppm $PH_3$ | < -0.6 |
| | Overgas limit | maximum ppm for stable response to gas pulse | 75 |
| **LIFETIME** | Zero drift | ppm equivalent change/year in lab air | < ±0.05 |
| | Sensitivity drift | % change/year in lab air, monthly test | < 10 |
| | Operating life | months until 80% original signal (24 month warranted) | > 24 |
| **ENVIRONMENTAL** | | | |
| | Sensitivity @ -20°C | %(output @ -20°C/output @ 20°C) @ 11ppm $PH_3$ | 20 to 70 |
| | Sensitivity @ 50°C | % (output @ 50°C/output @ 20°C) @ 5ppm $PH_3$ | 130 to 160 |
| | Zero @ -20°C | ppm equivalent change from 20°C | < ±0.04 |
| | Zero @ 50°C | ppm equivalent change from 20°C | < ±0.04 |
| **CROSS SENSITIVITY** | $H_2S$ sensitivity | % meaured gas @ 20ppm $H_2S$ | < 15 |
| | $NO_2$ sensitivity | % meaured gas @ 10ppm $NO_2$ | < -30 |
| | $Cl_2$ sensitivity | % meaured gas @ 10ppm $Cl_2$ | < -30 |
| | NO sensitivity | % meaured gas @ 50ppm NO | < 1 |
| | $SO_2$ sensitivity | % meaured gas @ 20ppm $SO_2$ | < 60 |
| | CO sensitivity | % meaured gas @ 400ppm CO | < 0.7 |
| | $H_2$ sensitivity | % meaured gas @ 400ppm $H_2$ | < 0.2 |
| | $C_2H_4$ sensitivity | % meaured gas @ 80ppm $C_2H_4$ | < 10 |
| | $NH_3$ sensitivity | % meaured gas @ 25ppm $NH_3$ | < 0.2 |
| | $CO_2$ sensitivity | % meaured gas @ 5% vol $CO_2$ | < 0.1 |
| **KEY SPECIFICATIONS** | Temperature range | °C | -30 to 50 |
| | Pressure range | kPa | 80 to 120 |
| | Humidity range | % rh continuous | 20 to 90 |
| | Storage period | months @ 0 to 20°C (stored in original container) | 6 |
| | Load resistor | Ω | 10 to 33 |
| | Bias voltage | mV | not required |
| | Weight | g | < 6 |

At the end of the product's life, do not dispose of any electronic sensor, component or instrument in the domestic waste, but contact the instrument manufacturer, Alphasense or its distributor for disposal instructions.

**NOTE:** all sensors are tested at ambient environmental conditions, with 10 ohm load resistor, unless otherwise stated. As applications of use are outside our control, the information provided is given without legal responsibility. Customers should test under their own conditions, to ensure that the sensors are suitable for their own requirements.

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# PH3-A1 Performance Data

## Figure 2 Sensitivity Temperature Dependence

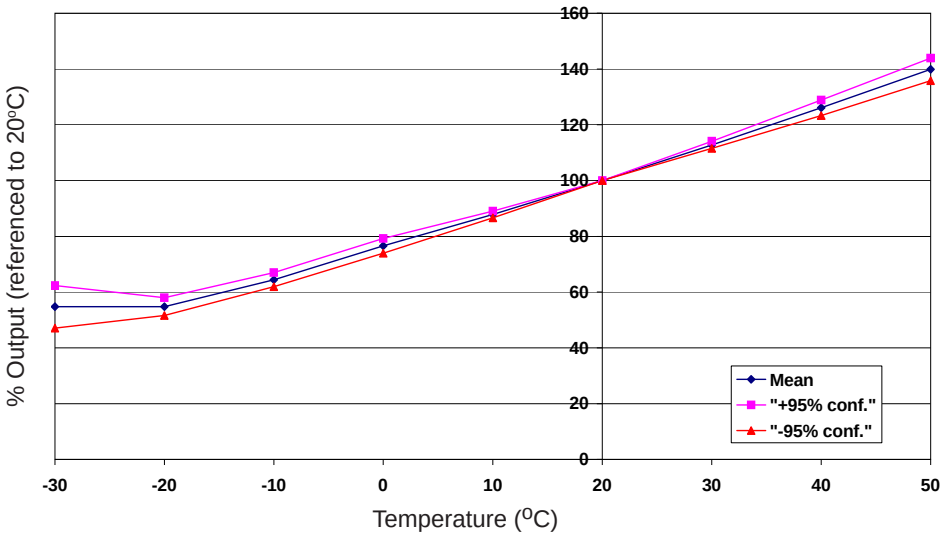


Figure 2 shows the variation in sensitivity caused by changes in temperature.

This data is taken from a typical batch of sensors. The mean and ±95% confidence intervals are shown.

## Figure 3 Zero Temperature Dependence

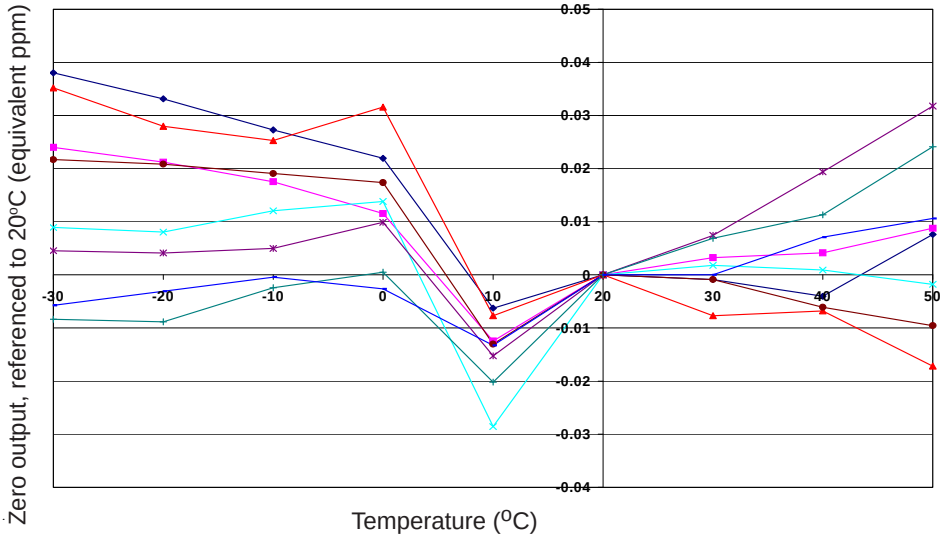


Figure 3 shows the variation in zero output caused by changes in temperature expressed as ppm gas equivalent, referenced to zero at 20°C.

This data is taken from a typical batch of sensors.

## Figure 4 Linearity

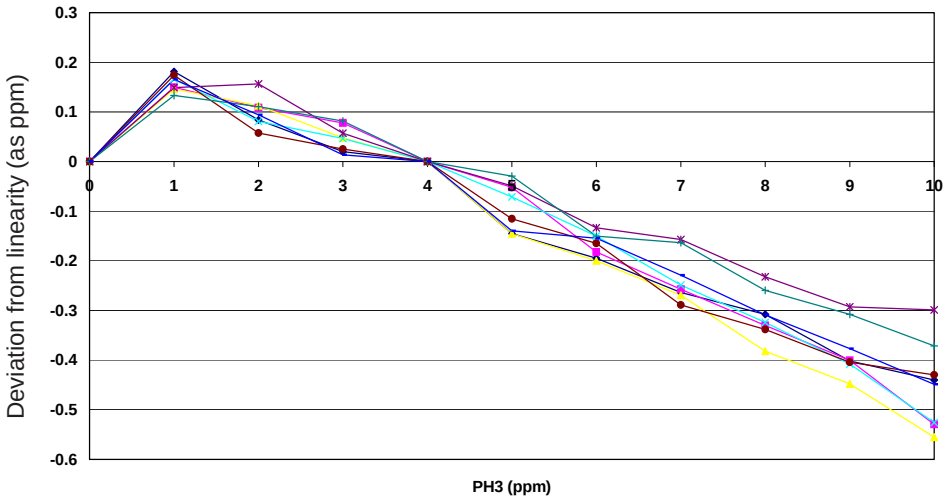


Figure 4 shows variation from linearity to 10ppm. Software correction between 0 and 0.5ppm can improve overall linearity.

Repeatable performance means linearity can be corrected in software.

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